

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 09-210866

(43)Date of publication of application : 15.08.1997

(51)Int.Cl.

G01M 17/007

(21)Application number : 08-040276

(71)Applicant : HONDA MOTOR CO LTD

(22)Date of filing : 05.02.1996

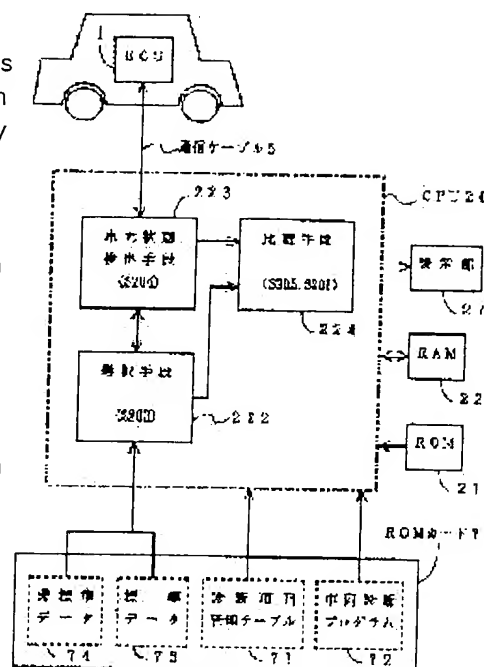
(72)Inventor : USUI SHIGERU  
YOKOI HIROSHI  
SASAKI KAZUMUNE

## (54) METHOD AND APPARATUS FOR DIAGNOSING VEHICLE

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide a method and an apparatus for diagnosing vehicles whereby an operator is not restricted by an order or a timing of various manipulations to be executed for every diagnosis item.

**SOLUTION:** A selecting means 222 cyclically repeatedly selects a state of a vehicle to be assumed by each part of the vehicle when a manipulation proper to each diagnosis item is carried out,, from a standard data memory area 73 or a non-standard data memory area 74 of a ROM card 7. A vehicle state- detecting means 223 detects an actual state of each part of the vehicle corresponding to the selected state of the vehicle. A comparing means 224 compares the selected state and detected state, diagnosing and displaying to a display part 27 that the diagnosis item is good when the states are in an estimated relationship.



## LEGAL STATUS

[Date of request for examination]

05.09.2000

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

\* NOTICES \*

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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the block diagram having shown the composition of ECU1 carried in the vehicles for a diagnosis, and the vehicles diagnostic equipment 2 of this invention.

[Drawing 2] It is drawing which expressed the content of storage of the ROM card 7 typically.

[Drawing 3] It is drawing having shown the content of storage of the diagnostic item managed table 71.

[Drawing 4] It is drawing having shown the content of storage of the non-standard data storage area 74.

[Drawing 5] It is drawing having shown the content of storage of the standard data storage area 73.

[Drawing 6] It is drawing having shown the example of a display in a display 27.

[Drawing 7] It is the functional block diagram of the vehicles diagnostic equipment which is the 1st operation gestalt of this invention.

[Drawing 8] It is the flow chart which showed the outline of the vehicles diagnosis by this invention.

[Drawing 9] It is the flow chart which showed operation of initial processing.

[Drawing 10] It is the flow chart which showed operation of a vehicle speed sensor diagnosis.

[Drawing 11] It is the flow chart which showed operation of an EGR diagnosis.

[Drawing 12] Ne It is the flow chart which showed operation of a diagnosis.

[Drawing 13] Ne It is the flow chart which showed operation (continuation) of a diagnosis.

[Drawing 14] It is the flow chart which showed operation of each switch diagnosis.

[Drawing 15] It is the flow chart which showed operation of end processing.

[Drawing 16] It is the flow chart which showed operation of standby-mode processing.

[Description of Notations]

1 [ -- An actuator, 4 / -- A sensor, 5 / -- A telecommunication cable, 7 / -- A ROM card, 16, 17, 18 / -- A connector, 20 / -- CPU, 24 / -- The transmitting section, 27 / -- Display ] -- ECU, 2 -- Vehicles diagnostic equipment, 3

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[Translation done.]

The diagram illustrates a portable electronic device (1) and its connection to a host computer (30). The portable device (1) includes a CPU (10), ROM (11), RAM (12), a driver (13), an A/D converter (14), a communication interface (15), and a battery (19). It is connected to a host computer (30) via a communication interface (15) and a communication interface (25). The host computer (30) includes a CPU (20), ROM (21), RAM (22), a display unit (LCD) (27), a ROM card interface (28), a ROM card (7), a communication interface (25), a transmission unit (24), a barcode interface (32), and a power source (29). The host computer (30) is connected to a host computer (30) via a communication interface (25) and a communication interface (31). The host computer (30) is connected to a host computer (30) via a communication interface (25) and a communication interface (31).

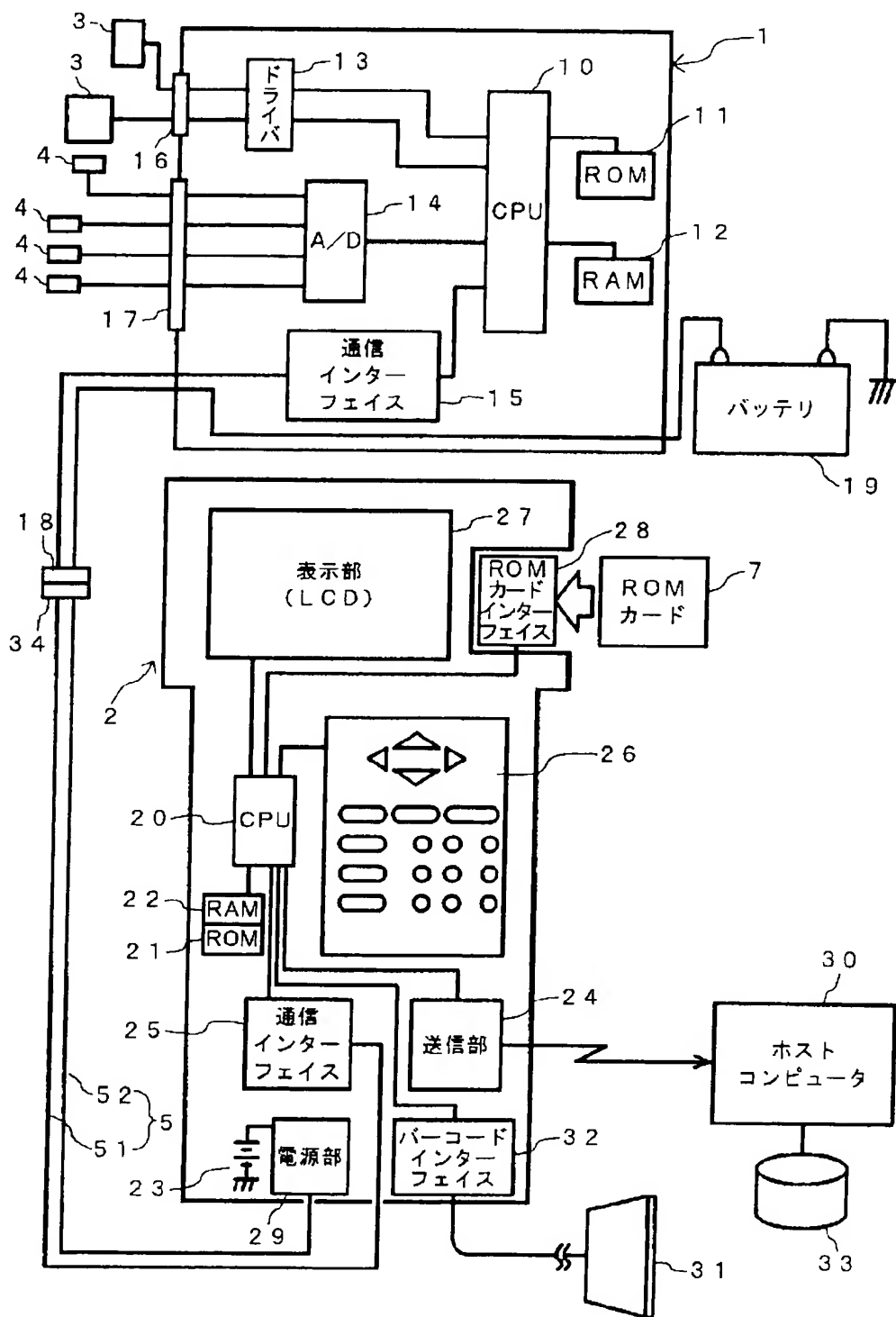


Fig. 2

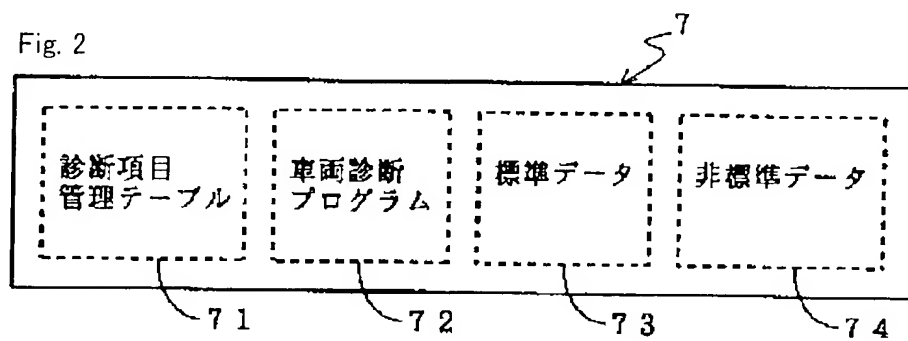


Fig. 3

ECUコード	診 断 項 目						
	01	02	03	04	05	06	.....
○△×□	1	1	0	0	1	1	.....
××△□	1	0	0	0	0	1	.....
○○△□	1	1	0	0	0	1	.....
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
○△□×	1	1	1	0	1	1	.....

71

Fig. 4

ECUコード	NID-ref
○△×□	700
××△□	710
○○△□	640
○△□×	650

74

Fig. 5

名 称	符 号	基準値／単位
基準アイドリング診断回数	CID-ref	x1 (回)
基準車速	V S ref	x2 (km/h)
許容回転数公差	NID-TPC	x3 (RPM)
基準アイドリング計測時間	MID-ref	x4 (sec)
待機モード始動条件	Tss-ref	x5 (min)

73

Fig. 6

診断項目

00	01	02	03	04
	05	06	-----	
-----				

(a)

27

診断項目

00	03
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(d)

27

診断項目

00	02	03	04
	05	06	-----
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(b)

27

診断項目

03
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(e)

27

診断項目

02
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(c)

27

診断項目

合格!
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(f)

27

Fig. 7

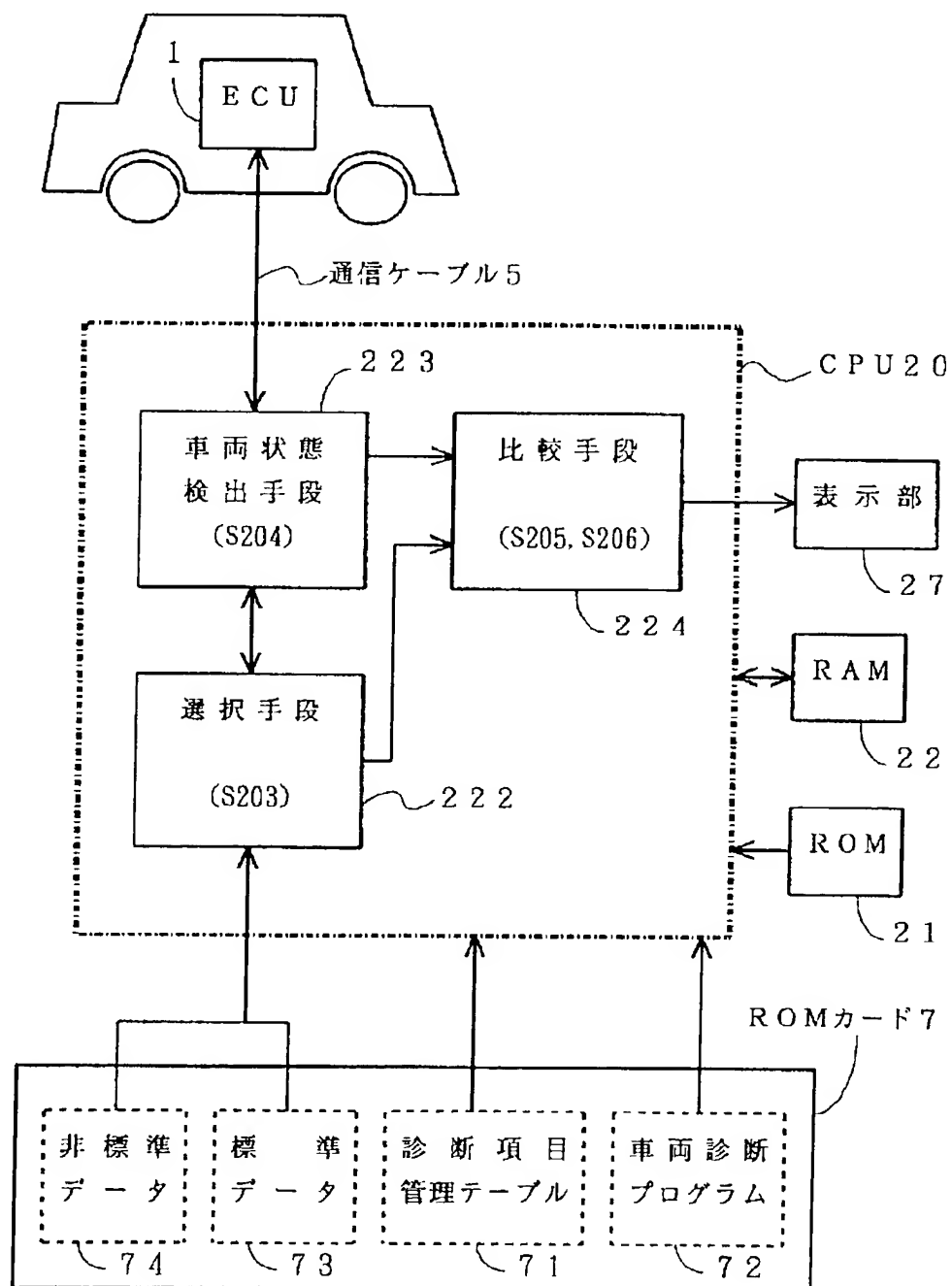


Fig. 8

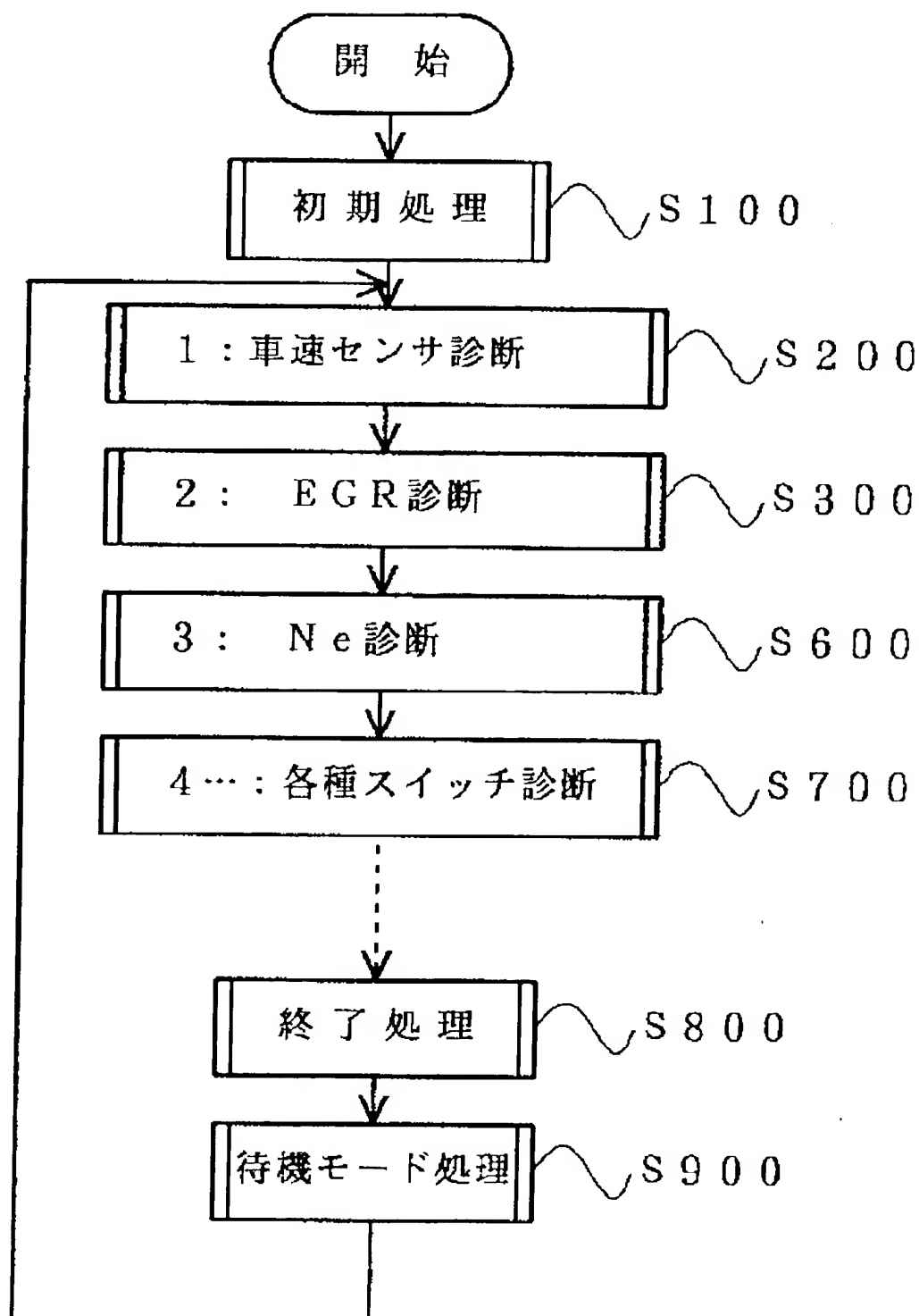


Fig. 9

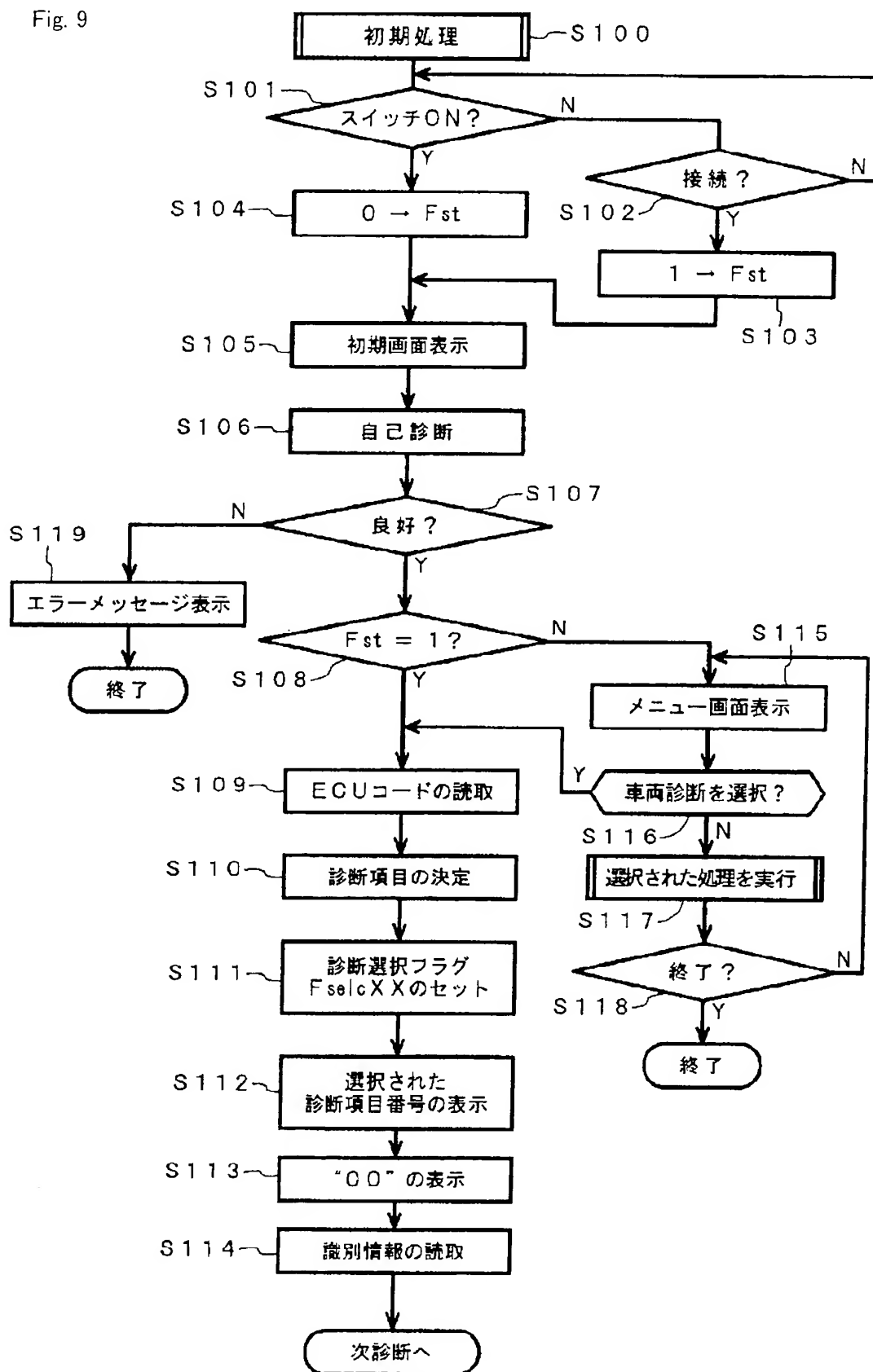




Fig. 10

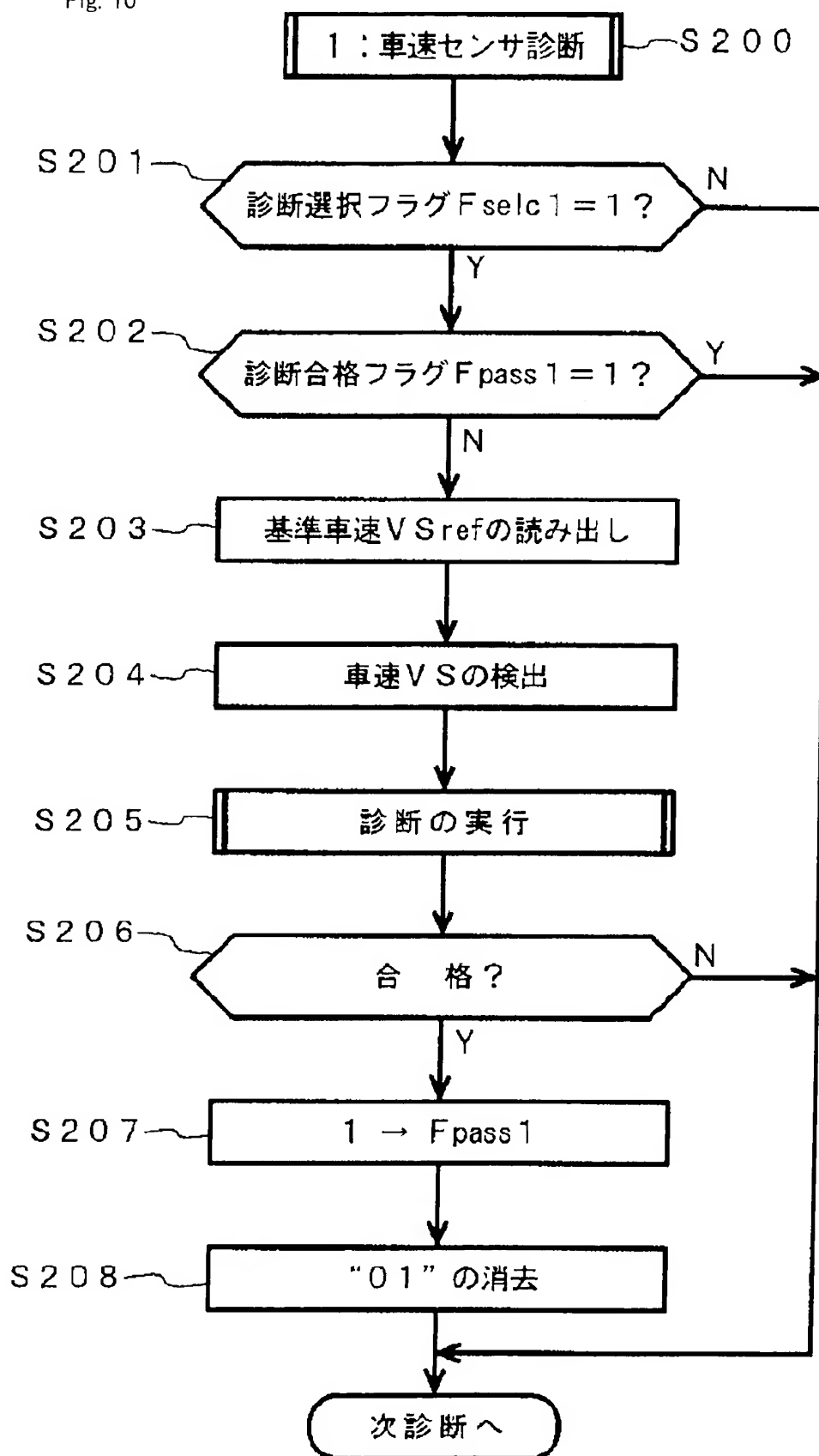


Fig. 11

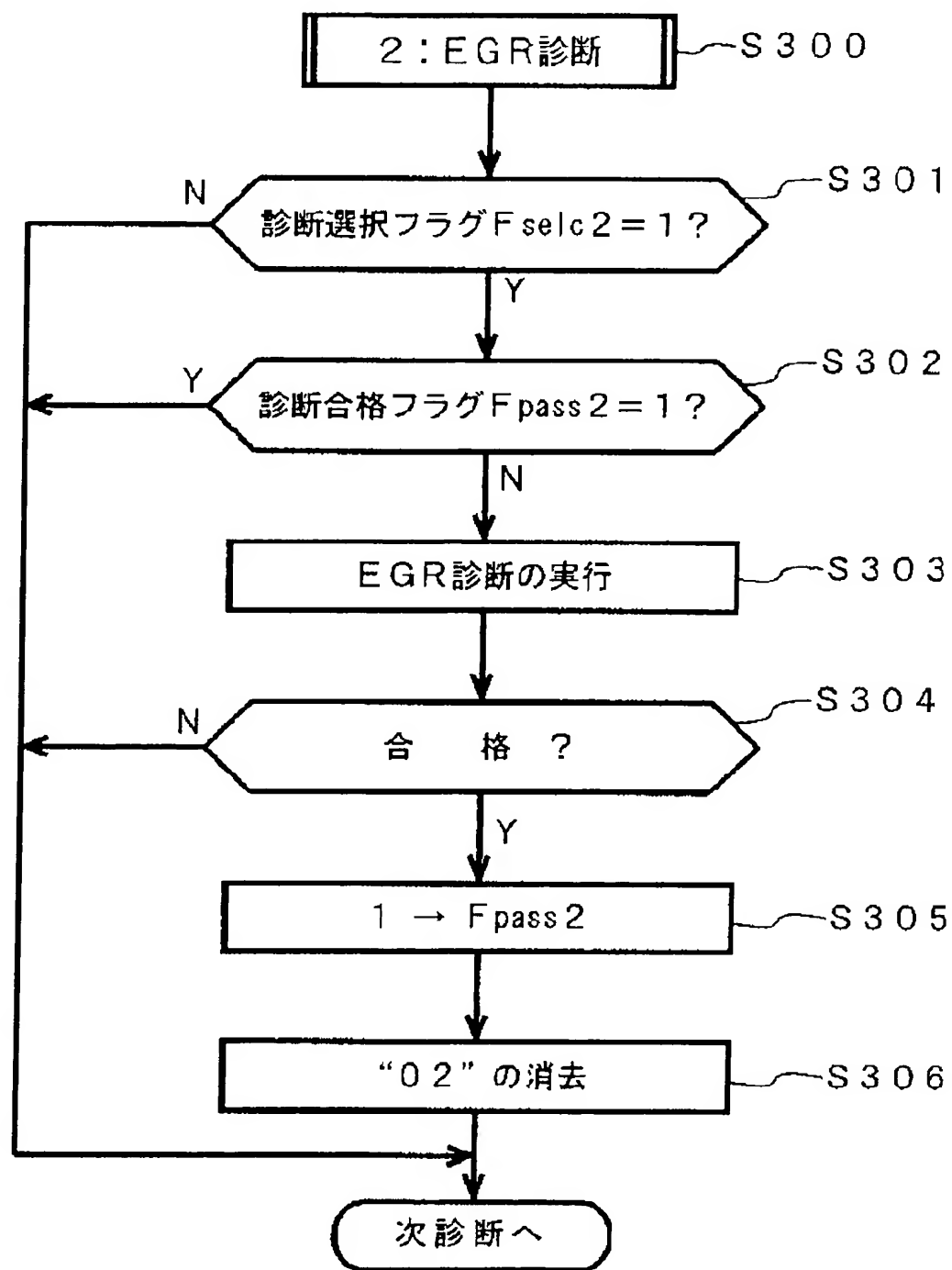


Fig. 12

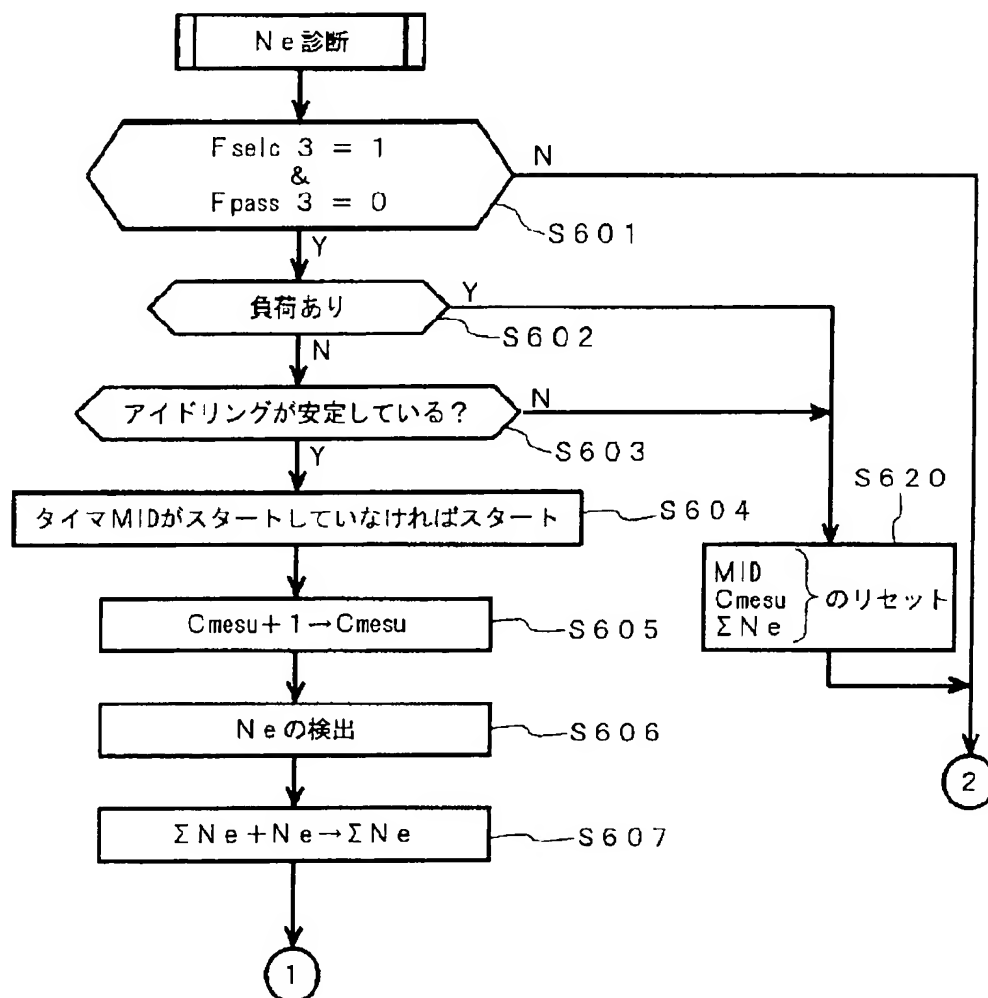


Fig. 13

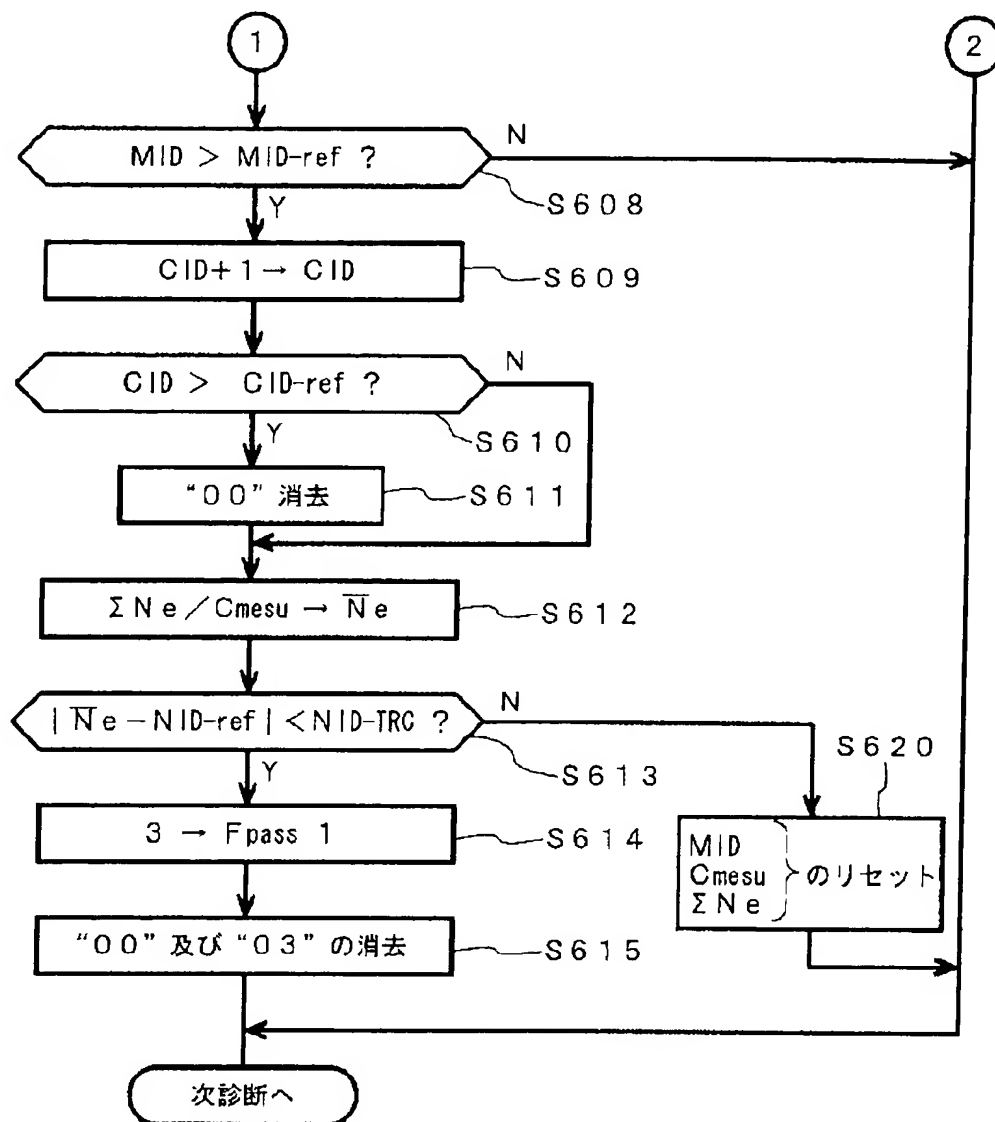


Fig. 14

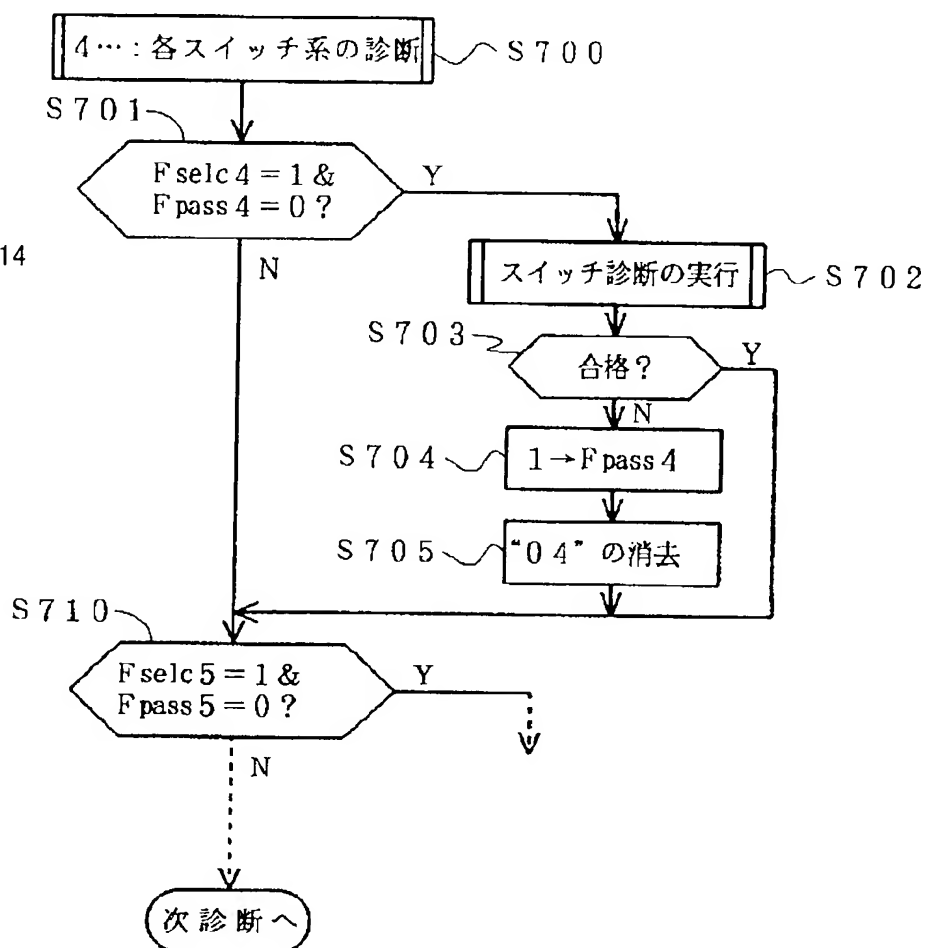


Fig. 15

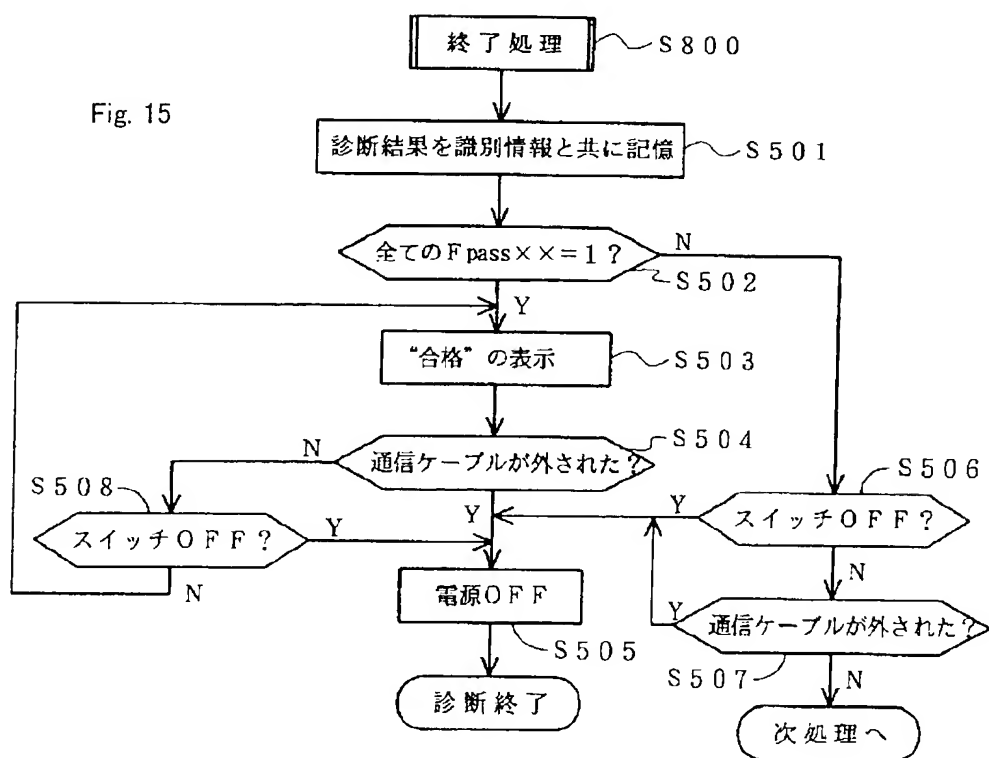


Fig. 16

